OrangeFS

The Next Evolution of PVFS

PVFS2

Brought Us….

- Modular Architecture
- Support for Standard out of the box kernels
- Distributed Meta-data
- Scalability
- Direct MPI Support
- Hardware Independence
- Stateless Operations

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OrangeFS …

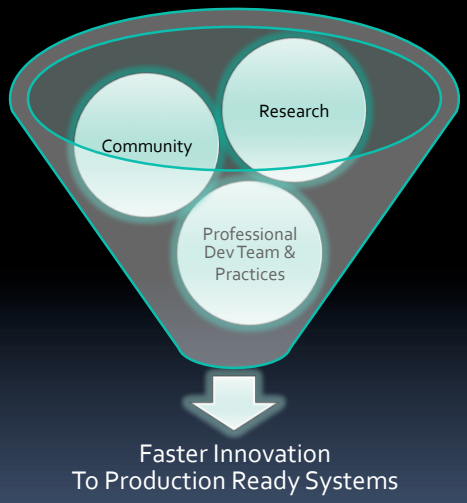
(Current 2.8.4)

Added…

- Commercial Grade support (from Omnibond)
- Dedicated Professional Development Team
- Improved stability
- improved meta-data performance for better small file throughput
- replicated data for immutable files
- Supports SSD for Metadata

Still…

- Empower Research
- Community Driven
- 100% Open Source



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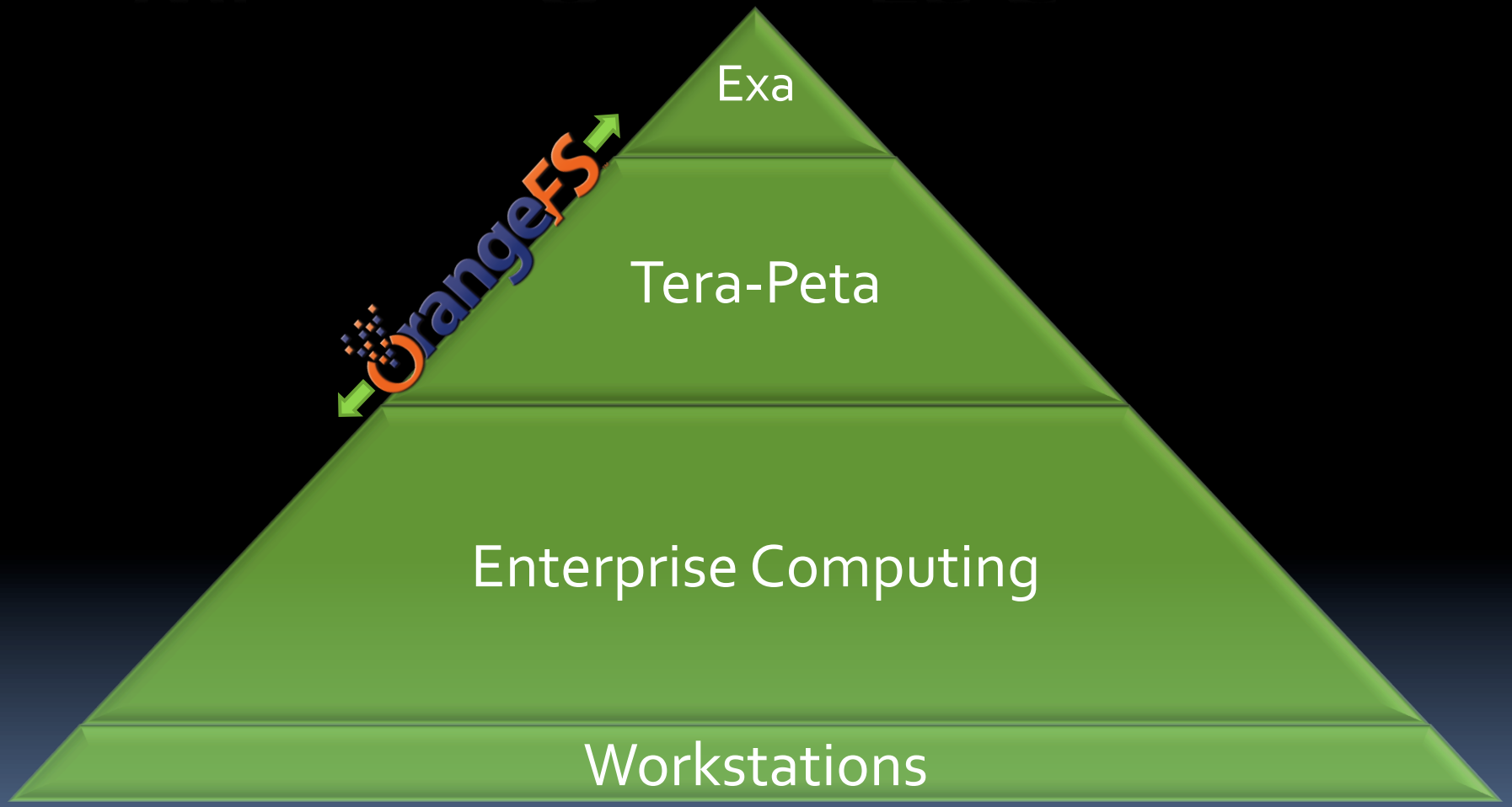
OrangeFS…

(This Year 2.8.5 & 2.8.6)

Will Bring…

- Distributed Directories
  - Based on / Derived from Giga+
- Capability Based Security
- Enhanced Client Libraries
  - Can preload for applications that use standard POSIX calls
  - Client Side Caching (Single System Coherence)
- Windows Client (with Certificate based Authentication)
- WebDav Library (mod_dav_orangefs)
- Enhanced performance Counters and Debugging Tools

Where is OrangeFS Going



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Similar Requirements Differing Reasons

	Enterprise / other Research Areas	Exascale
• Data / IO growth	• Glimpse of the HEC Space	• Decade old problem on an exponential path
• Resilience	• Up-Time	• Something is always down
• Security	• Shared File Systems	• Distributed User-base
• Management	• Ease of Administration	• Mass System Management

OrangeFS-Next…

- 128bit UUID Handles
- Data Replication
  - Lazy, On Commit, Continuous
  - Data Tiering
  - Hardware Life-Cycle activities (keep the data online)
- Self Connecting Storage Nodes
  - Ultimately Storage nodes will not need to know about all other nodes (~only ones it shares data with)
  - Nodes will need to understand locality, classes of server, replica info
- Background self healing processes…

PXFS

Sterling, Ligon

- ParalleX FS
  - Similar to PGAS (Partitioned Global Address Space)
  - Active Messages (Sending Message Invokes Thread)
  - Futures Synchronization
- Integrate the file system
  - Blur the line between memory and File System
- Highly Object Oriented (C++)
- Exascale

Think of Bucky-Compute-Balls that can be flung to the data it needs

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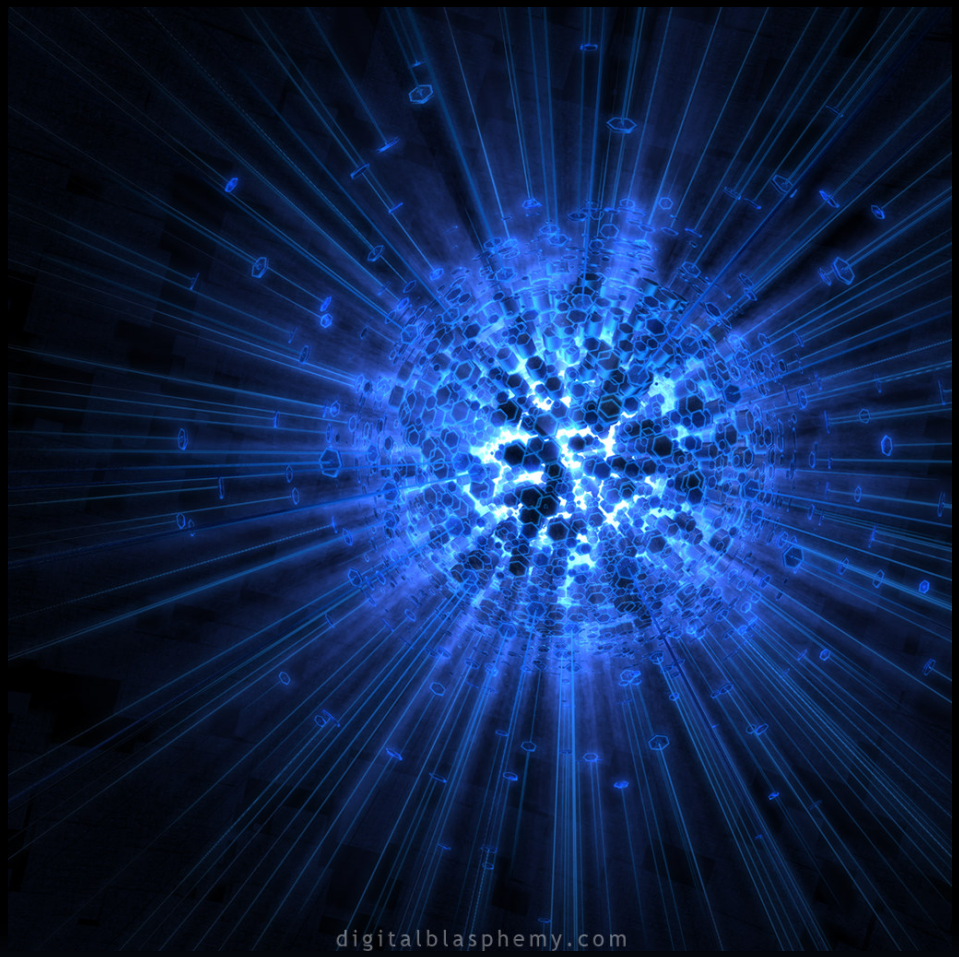
Thanks!



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